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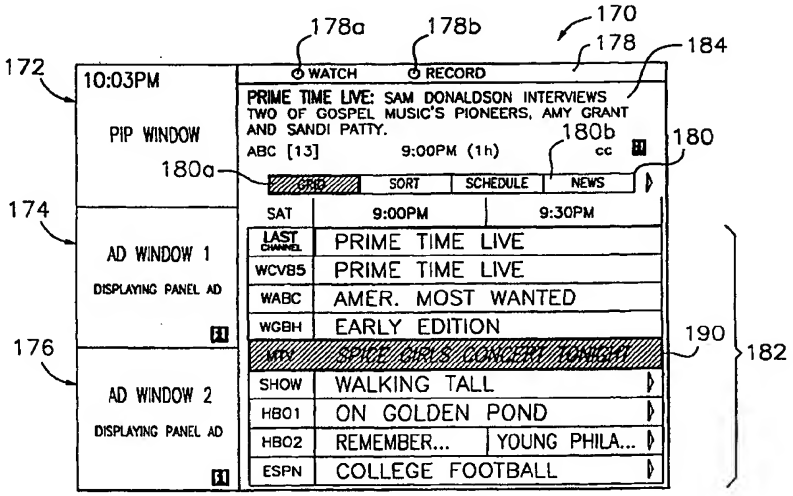

(57) Abstract

A system and method for displaying an EPG grid according to a default channel lineup, and customizing the default display according to user preferences. The default channel lineup is transmitted to a television apparatus in two different packets: an enabling priority packet and an extended display priority packet. The enabling priority packet includes a list of default channels to be enabled on the guide. The extended display priority packet includes a list of channel groups indicative of an order of display of the channels available to the television apparatus. The default channels also get a detailed program description. A channel editor screen allows a viewer to modify the default display of the guide by enabling or disabling channels, changing the order of the channel display, or modifying the channels that receive a detailed program description.

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SYSTEM AND METHOD OF DEFAULT CHANNEL LINEUP AND DISPLAY WITH CUSTOMIZATION OF ELECTRONIC PROGRAM GUIDE GRIDS

REFERENCE TO CROSS-RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 60/113,967, filed on December 28, 1998, which is hereby incorporated by reference.

FIELD OF THE INVENTION

This invention relates generally to television systems, and more particularly, to a television system including a default channel lineup for default display of the electronic program guide, the electronic program guide being customizable according to viewer preferences.

BACKGROUND OF THE INVENTION

A television system today is capable of receiving hundreds of channels. Information about all these channels cannot be displayed by the television system at a single given time in its electronic program guide (EPG) grid. Thus, for an initial display of the EPG, a determination needs to be made as to the default channels that will appear on the grid. A determination also needs to be made as to the default channels that will get a program description if such program description cannot be displayed for all of the default channels due to memory limitations at the television system. Once these choices are made, the default order in which to display the channels must also be decided.

One method of handling these decisions is by transmitting to the television system, a channel lineup of all channels available to the viewer and selecting the channels at the top of the list as default channels that will appear on the EPG grid. The channel lineup is transmitted in a display priority packet ("DPP") and stored in the television system's memory. The EPG then displays, as a default, the channels that appear at the top of the list (e.g. the first 50 channels). All the displayed channels also get a program description. For example the following channel lineup may be transmitted in the DPP:

1) Major Network 1
2) Major Network 2
3) minor network 1
4) minor network 2
5) Major Movie Channel 1
6) Major Movie Channel 2
7) Major Movie Channel 3

8) Major Movie Channel 4
9) minor movie channel 1
10) minor movie channel 2

If four channels are to be displayed by default, those four channels, according to the illustrated example would be Major Network 1, Major Network 2, minor network 1, and minor network 2. For a different default display of channels, the channel lineup in the DPP is changed and re-transmitted to the television system. For instance, if two Major Networks are to be displayed by default with the two Major Movie channels, the above illustrated channel lineup would be changed to look as follows:

1) Major Network 1
2) Major Network 1
3) Major Movie Channel 1
4) Major Movie Channel 2
5) minor network 1
6) minor network 2
7) Major Movie Channel 3
8) Major Movie Channel 4
9) minor movie channel 1
10) minor movie channel 2

A viewer desiring to include an additional channel to be displayed on the EPG retrieves the channel lineup from memory and selects the desired channel from the lineup.

One of the drawbacks of the described method is that the order of the listing of the channels on the channel lineup also dictates which channels are to be displayed by default. Thus, a channel to be displayed by default must appear together at the top of the channel lineup, often apart from the rest of the channels to which it belongs. The channels in the channel lineup, therefore, cannot be kept together by category/theme. As a result, the channels on the EPG grid can also not be kept together by category/theme if channels other than the default channels are to be enabled by the viewer.

For instance, in the above example, if only the two Major Network channels and the two Major Movie channels are to be displayed on the guide, the guide appears organized based on the theme of the channels, and the viewer may easily locate a particular network channel or movie channel by looking at the network channel section or the movie channel section, respectively. However, if the viewer wants to enable minor network 1 to also appear on the guide, it will be displayed below the major movie channels rather than with the rest of the network channels since

the channel lineup dictates the order of the display of the channels. As more and more channels appear on the guide, it becomes more and more important to maintain the channels displayed on the EPG grid in an organized fashion, thereby allowing the viewer to quickly locate a desired channel.

Another drawback with the described method is that the channels displayed by default also get a detailed program description. However, a viewer may access the detailed program descriptions of programs of only particular channels that the viewer watches most, and rarely access the detailed program descriptions of the remaining channels that the viewer is not interested in. Thus, storing detailed program descriptions of these channels is an inefficient use of the television system's memory space.

Accordingly, there is a need for an EPG where the default channels to be displayed may be maintained together with the non-default channels in its category, allowing the channels to be organized based on theme. There is also a need for an EPG where the channels that are displayed by default do not automatically get a detailed program description. Instead, a viewer would be able to select the channels which are to get the detailed description.

SUMMARY OF THE INVENTION

The present invention comprises a system and method for displaying an EPG grid according to a default channel lineup. The display of the EPG grid may then be customized according to user preferences.

In one embodiment of the invention, the default channel lineup is transmitted in two different packets: and enabling priority packet and an extended display priority packet. The television apparatus receives in the enabling priority packet a list of default individual channels to be displayed on the electronic program guide grid. The television apparatus also receives in the extended display priority packet a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus. The list of default individual channels and list of channel groups are then stored in the memory of the television apparatus. It will be appreciated, therefore, that the channels in the channel lineup may now be maintained together based on category 1 theme.

For a default display of the EPG grid, the television apparatus retrieves the list of default individual channels and their associated program schedule information from the memory. The television apparatus then displays the list of default individual channels and a portion of the program schedule information associated with the individual channels on the electronic program guide grid according to the order of display indicated by the list of channel groups.

In one particular aspect of the invention, the default individual channels also get a detailed program description of programs telecast by the default individual channels.

In another particular aspect of the invention, a viewer may modify the default display of the EPG grid by enabling a non-default individual channel from a channel editor screen. The non-default individual channel and its program schedule information is then displayed according to the order indicated by the list of channel groups. The viewer may further modify the individual channels that get a detailed program description, or the order in which the individual channels are displayed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic block diagram of an interactive television schedule system including a television system and a cable box according to one embodiment of the invention;

FIG. 2 is a more detailed schematic block diagram of the cable box of FIG. 1;

FIG. 3 is a more detailed schematic block diagram of the television system of FIG. 1;

FIG. 4 is a schematic layout diagram of an enabling priority packet;

FIG. 5 is a schematic layout diagram of an extended display priority packet;

FIG. 6 is a schematic layout diagram of an extended display priority packet according to an alternative embodiment;

FIG. 7 is an illustration of an EPG screen displaying channels according to the information in the enabling priority packet of FIG. 4 and the extended display priority packet of FIG. 5;

FIG. 8 is an illustration of the EPG screen of FIG. 7 according to an alternative embodiment; and

FIG. 9 is an illustration of a channel editor screen for modifying an EPG screen display.

DETAILED DESCRIPTION

In general terms, the present system and method is directed to an interactive television schedule system having a television apparatus equipped with an interactive electronic program guide (EPG) that provides a customizable display of channels and detailed program descriptions appearing on the EPG.

FIG. 1 is a schematic block diagram of an interactive television schedule system according to one embodiment of the invention. The interactive television schedule system includes a television system 45 receiving input from a cable box 20 and an IRD box 25. The television system 10 includes a television 50 and a VCR 15.

The television 50 is configured with an interactive EPG 45 for displaying television schedule information and information relating to additional services (collectively referred to as "EPG data") as is described in further detail below. A viewer interacts with the television 50 and EPG 45 via a viewer input device 40, preferably taking the form of an IR remote control 40,

according to conventional methods. Other viewer input devices 40 might also be utilized, such as a keyboard, keypad, joystick, mouse, track ball, touch pad, and the like.

Many different transmission schemes are available for providing EPG data to various receivers 20, 25, 30, 35 of the television system 10. For example, EPG data can be provided via cable and/or Direct Broadcast Satellite (DBS) through the cable box 20 and/or IRD box 25, respectively. An antenna 35 coupled to the television 50 can also be used as an additional source of EPG data. Furthermore, the data can be transmitted through other inputs 30 such as conventional satellite systems, coax cables, telephone lines, and fibre optic cables.

FIG. 2 is a more detailed schematic block diagram of the cable box 20 of FIG. 1 for providing EPG data to the television system 10. As illustrated in FIG. 2, the cable box 20 includes a processor 60 and a memory 65. The memory 65 of cable box 20 stores software 70 for receiving, organizing, and displaying EPG data as well as the EPG data itself. The EPG data, however, is preferably stored in a memory of the television system 10 as is described below in conjunction with FIG. 3.

The memory 65 may further store data related to the viewer's profile and the like. In one embodiment of the invention, a portion of the data stored in memory 65 is obtained via the Internet through a cable modem 75. Other portions of the data are generated by the processor from data received from a cable head end.

FIG. 3 is a more detailed schematic block diagram of the television system 10 of FIG. 1. With reference to FIG. 3, a source of television signals 100 such as the antenna 35, cable box 20, or IRD box 25 is connected to a television tuner 105. The output of tuner 105 is a modulated intermediate frequency signal 110 containing video and audio television information. The tuner 105 is connected by an intermediate frequency amplifier (IF AMP) 110 to a picture detector (PICTURE DET) 115 and a sound detector (SOUND DET) 120, which produce base band video and audio signals, respectively. The audio signal is coupled by a sound amplifier (SOUND AMP) 125 to a loudspeaker 130. The video signal is coupled by a video amplifier (not shown) to one input of a switch 135. The sound detector 120 and picture detector 115 are connected to the audio and video inputs, respectively, of the VCR 15. Alternatively, television signal source 100 could be directly connected to the RF input of the VCR 15 if its internal tuner and demodulating circuitry is to be utilized.

The output of the VCR 15 is connected to the other input of the switch 135. The output of the switch 135 is connected to one input of a conventional picture-in-picture (PIP) integrated circuit chip 140. The output of the PIP chip 140 is connected to the video input 142 of the television 50 having a screen (not shown).

According to one embodiment of the invention, the television system 10 illustrated in FIG. 3 includes an EPG memory 145 for storing an updatable database of television program schedule

information. The database can be updated by a continuous data link in the vertical blanking interval (VBI) of a television channel broadcast to the television system 10 in well known fashion.

The EPG memory 145 is connected to a microprocessor 150 that is programmed to control the operation of the television 50. An operating program for the microprocessor 150 is stored in a read only memory (ROM) 155. The viewer input device 40 is coupled to the microprocessor 150 to provide commands from the viewer and interact with the EPG.

A video processor 160 is coupled to microprocessor 150. When the viewer wishes to see the television program schedule information, the microprocessor 150 recalls a portion of the relevant data from the EPG memory 145 and couples it to video processor 160, where the program listings are formatted for display. Preferably, the information stored in video processor 160 is a bit map of what is displayed on the screen of television 50.

The video processor 160 is further connected to the other input of the PIP chip 140. Preferably, the viewer input device 40 controls the microprocessor 150 by cursor movement on the screen of television 50. To this end, microprocessor 150 and video processor 160 are coupled to a cursor position register 165. Alternatively, the viewer can select items of information displayed on the screen by selecting a particular keys on the viewer input device 40.

The microprocessor 150 is also coupled to the tuner 105 for channel change, to the VCR 15 for play/record selection and start/stop, to the switch 135 for selection of one of its inputs, and to the PIP chip 140 for selection of the mode of PIP operation.

Referring back to the EPG memory 145, television program schedule information is stored in a program schedule database of the EPG memory and includes the program schedules of all the available channels for a prescribed period of time, e.g. a day or a week. These program listings typically include, for each program, the title, a program description, the day of the week, the start time of the day, the program length, and the channel on which the program is transmitted and thus available for reception at source 100. In a preferred embodiment of the invention, the period of time for which the program listings are stored is different for the guides, depending upon viewer priorities and preferences. For example, the information may be stored for one or two days, or for a week or more.

The EPG memory 145 further stores the channel lineup of all the channels available to the viewer according to the order in which they are to appear on the EPG grid. The ordering of the channels in the channel lineup is not dependent on the default channels that are to be displayed on the EPG grid. Thus, the channels that are to be displayed by default need not appear together at the top of the channel lineup, but all the channels in the channel lineup may kept organized according to their themes.

In this regard, unlike the prior art where channel lineup information was transmitted in a single DPP packet, the channel lineup information according to one embodiment of the invention is transmitted in two separate packets: an enabling priority packet ("EPP") and an extended display priority packet ("XDPP"). The EPP contains a list of default individual channels that are to be enabled (i.e. displayed on the EPG grid) and are to have detailed program descriptions. The XDPP contains a channel lineup of all channel groups listed in the order in which the individual channels belonging to each of the channel groups, once enabled, are to be displayed on the EPG grid. In this way, the enabled channels may appear together in the guide according to their groups, allowing an organized look and feel to the EPG grid.

FIG. 4 is a schematic layout diagram of an exemplary EPP 200. According to the example illustrated in FIG. 4, among the default individual channels to be displayed on the EPG grid are three network channels, "WCVB5," "WABC," "WBGH," all affiliates of the ABC network. Other default channels include three movie channels, "HBO1," "HBO2," and "SHOWTIME," an "MTV" channel, and one sports channel, "ESPN." All of these default channels will also include a detailed program description available through the EPG. The detailed program description appears in a separate information box upon selection of one of theses channels, as is described in further detail below.

FIG. 5 is a schematic layout diagram of an exemplary XDPP with a channel lineup of all channel groups to which individual channels belong, transmitted along with the EPP illustrated in FIG. 4. According to the example illustrated in FIG. 5, all the individual channels belonging to the ABC network, such as "WCVB5," "WABC," "WBGH," of FIG. 4, will be displayed on the top of the guide once they have been enabled, either by default or by viewer interaction with the guide. The individual channels belonging to the ABC network will be followed by all the individual channels belonging to the FOX network, CBS network, and NBC network. Following the network channels are all the MTV channels, SHOWTIME channels, HBO channels, AMC channels, and ESPN channels.

In an alternative embodiment illustrated in FIG. 6, the channel groups listed in the XDPP are generic channel categories not associated with any particular television or cable network. For instance, all individual channels belonging to the major television networks are grouped under a "Major Network" category regardless of whether the network is "ABC," "NBC," or any other major television network. Furthermore, all movie channels are grouped under a "MOVIE" category regardless of whether the movie is being provided by "HBO," "SHOWTIME," or any other movie channel.

FIG. 7 is an illustration of an EPG screen 170 generated by the video processor 160 (FIG. 3) under the control of the microprocessor 150. The viewer invokes an EPG guide mode for displaying the EPG screen 170 by pressing a "guide" key on the viewer input device 40. The

viewer returns to a full screen television mode by the same key or invoking a linked television program.

The EPG screen 170 is divided into a number of different display areas. A PIP window 172, a first panel ad window 174, and a second panel ad window 176 are arranged along the left side of screen 50. The remainder of the EPG screen 170 is typically occupied by an action key bar 178, a navigation bar 180, a grid guide 182, and an information box 184. In the embodiment illustrated in FIG. 7, the position of the windows, and other user interface features, including the action key bar 178, navigation bar 180 and grid guide 182, are fixed. In another embodiment of this invention, the position and size of the windows and other user interface features are customizable by the viewer.

The PIP window 172 displays real time broadcast programs or pre-recorded video clips produced by the PIP chip 140. A translucent overlay of the PIP window 172 can display a title, channel (local number and/or station name), and status (locked or unlocked) of the PIP window 172.

The first and second panel ad windows 174 and 176 display advertisements for future telecast programs or for products and services. An advertisement for a future telecast program is linked to a time and channel of the program allowing the viewer to watch or record the program automatically by highlighting the advertisement and pressing a watch action button 178a or a record action button 178b,respectively.

Highlighting an advertisement for a product or service allows the viewer to read one or more pages about the product or service from the information box 184. Alternatively, the advertisement is linked to a time and channel of an infomercial allowing the viewer to watch or record the infomercial by highlighting the advertisement and pressing the watch action button 178a or the record action button 178b, respectively.

The viewer accesses television program schedule information
by actuating a grid button 180a from a list of menu buttons listed on the navigational bar 180. Upon actuation of the grid button 180a, the grid guide 182 displays a list of television programs with their respective channel designations in a series of program tiles. The default list of channels displayed on the grid guide 182 is determined by the individual channels listed in the EPP. The ordering of the channels on the grid guide 182 is determined by the ordering specified in the XDPP.

Selection of a program tile causes a display of additional information about the selected program in an information box 184. Such additional information might include a detailed description of the selected program, such as who is to appear on the program and what the program is about.

In addition to the program tiles, the grid guide 22 includes advertisement tiles 190 with virtual channel advertisements. A virtual channel ad may promote, for instance, a current or future television program. Such a virtual channel ad for a television program is linked to a time and channel of the program allowing the viewer to watch or record the program automatically.

According to one embodiment of the invention, the EPG screen 170 further includes a number of menu buttons (not shown) associated with different channel groups. The selection of a particular menu button causes the screen cursor to jump to the portion of the grid guide with the program tiles associated with the selected channel group. Alternatively, the program tiles are displayed in a separate information box 184 upon selection of the menu button. In yet another embodiment, page down buttons within the EPG screen 170 or on the viewer input device 40 are utilized to jump from channel group to channel group within the grid guide 182. Any of these methods become desirable when, due to the sheer number of displayed channels, it becomes problematic to locate individual channels within the grid.

For instance, the menu buttons may contain titles such as "MOVIES", "SPORTS", and "NEWS." Upon selection of the "MOVIES" menu button, either all the program tiles of channels belonging to movie channel groups such as HBO, SHOWTIME, and the like, are displayed in the information box 184, or the screen cursor jumps to the first of these program tiles.

FIG. 8 is an alternative representation of the EPG screen of FIG. 7. According to the embodiment of FIG. 8, all the channels belonging to a particular channel group are compressed into a single program tile 206 which is expandable upon selection of the tile. The program tile 206 is identified by the name of the channel group 206a, and includes instructions 206b to select the tile for viewing program tiles related to individual channels. For instance, in the grid guide 182 of FIG. 7, the three channels belonging to the ABC network, "WCVB5," "WABC," "WBGH," may now be compressed into a single "ABC" listing shown in FIG. 8. Upon selection of the program tile 206, the program tiles of individual channels belonging to the identified channel group are expanded within the grid guide 182 itself, or in the information box 184.

According to one embodiment of the invention, the default channels displayed on the grid guide 182, as well as the ordering of the channels displayed, may be modified by the viewer according to his or her preferences, through a channel editor screen. FIG. 9 is an illustration of an exemplary channel editor screen 210. The screen 210 includes two fields, a three column field 212 listing up to 36 unabridged channels and a single column field 208 listing the viewer's favorite channels. Additional channel pages are available (using a page key of the viewer input device 40 to swap between the pages) to accommodate more than 36 channels.

Each cell 214 in the three column field 212 contains a channel number and a channel descriptor (e.g. WCVB5, MTV). The channels in the three column field are initially listed in the

order designated by the XDPP. In addition, each cell 124 is color-coded to indicate an ON state, an OFF state, and a MY state. The ON state indicates that the channel is currently enabled, and will thus be displayed on the grid guide 182. A cell indicating the ON state is depicted in a light green background. Initially, the individual channels listed in the EPP are all indicated with an ON state.

The OFF state indicates that the channel is currently disabled, and will thus not be displayed on the grid guide 182. A cell indicating the OFF state is depicted in a gray background. The MY state indicates that the channel is enabled and currently listed one of the viewer's favorite channels. A cell indicating the MY state is depicted in a blue background.

A viewer enables a disabled channel by selecting its cell and actuating an ON button 216. The viewer may also disable an enabled channel by actuating an OFF button 218, or designate the channel as a favorite channel by actuating a MY button 220. A user may further designate an enabled channel as getting a detailed program description by selecting the channel and actuating an Information button 222. Cells with channels with detailed program description are identified by an information icon 224 in the corresponding cell. Initially, all channels listed in the EPP automatically get a detailed program description. The channels listed as the viewer's favorite channels also automatically get a detailed program description. The viewer may further modify the ordering of the channels displayed on the grid guide 182. In this regard, the viewer selects a cell 214 for a channel whose listing order is to be changed, and drags the cell to the desired location in the three column field 212. In an alternative embodiment, the user is limited to moving groups of channels instead of allowing him or her to move individual ones. For instance, a user who watches a lot of sports might move the sports channels to the top of the grid. Alternatively, the channels or types of channels most watched by the viewer are automatically tracked by the television system, and those channels or types of channels are automatically bubbled-up to the top of the grid. The viewer would have the ability to disable this function, however, to prevent the constant reorganization of channels due to the bubbling of channels to the top of the grid. These channels may also be automatically designated as favorite channels in the single column field 208 of the channel editor screen 210.

Although the present invention has been described in certain specific embodiments, many additional modifications and variations would be apparent to those skilled in the art. For instance, the EPG data might be stored in one or more locations, such as on different servers accessible through a global communications network such as the Internet. In another embodiment the EPG data is stored in a database at a central location, such as in a database that is part of the EPG provider's computer system. It is therefore to be understood that this invention may be practiced otherwise than is specifically described without the exercise of further inventive activity.

CLAIMS:

1. A method for creating a display of an electronic program guide grid of a television apparatus, the method comprising:

transmitting a list of default individual channels to be displayed on the electronic program guide grid;

transmitting a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus, each individual channel belonging to a particular channel group; and

transmitting program schedule information associated with the default individual channels for display on the electronic program guide along with a display of the default individual channels according to the order of display indicated by the list of channel groups.

2. The method of claim 1, wherein the program schedule information includes detailed program descriptions of programs telecast by the default individual channels.

3. A method for creating a display of an electronic program guide grid of a television apparatus having a memory, the method comprising:

receiving a list of default individual channels to be displayed on the electronic program guide grid;

receiving a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus, each individual channel belonging to a particular channel group;

storing the list of default individual channels and list of channel groups in the memory;

receiving program schedule information associated with the default individual channels;

storing the program schedule information in the memory;

retrieving the list of default individual channels and their associated program schedule information from the memory; and

displaying the list of default individual channels and a portion of the program schedule information associated with the individual channels on the electronic program guide grid according to the order of display indicated by the list of channel groups.

4. The method of claim 3, wherein the program schedule information includes detailed program descriptions of programs telecast by the default individual channels.

5. The method of claim 3 further comprising:

enabling a non-default individual channel; and

displaying the non-default individual channel and a portion of the program schedule information associated with the non-default individual channel according to the order of display indicated by the list of channel groups.

6. The method of claim 3 further comprising modifying the order of display of a particular individual channel and the portion of the program schedule information associated with the particular individual channel on the electronic program guide grid according to viewer preferences.

7. The method of claim 3 wherein the displaying comprises:

displaying a channel group associated with a particular individual channel on the electronic program guide grid according to the order of display indicated by the list of channel groups; and

expanding a list of individual channels belonging to the displayed channel group in response to a viewer command.

8. The method of claim 3 further comprising:

displaying a menu button associated with a particular channel group; and

jumping upon viewer command to a portion of the electronic program grid displaying a plurality of individual channels belonging to the particular channel group.

9. The method of claim 3 further comprising:

displaying a menu button associated with a particular channel group; and

displaying upon a viewer command a plurality of individual channels belonging to the particular channel group and a portion of the program schedule information associated with the plurality of the individual channels in a separate window of the electronic program guide grid.

10. A system for creating a display of an electronic program guide grid of a television apparatus, the system comprising:

means for transmitting a list of default individual channels to be displayed on the electronic program guide grid;

means for transmitting a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus, each individual channel belonging to a particular channel group; and

means for transmitting program schedule information associated with the default individual channels for display on the electronic program guide along with a display of the

default individual channels according to the order of display indicated by the list of channel groups.

11. The system of claim 10, wherein the program schedule information includes detailed program descriptions of programs telecast by the default individual channels.

12. A system for creating a display of an electronic program guide grid of a television apparatus, the system comprising:

means for receiving a list of default individual channels to be displayed on the electronic program guide grid;

means for receiving a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus, each individual channel belonging to a particular channel group;

means for storing the list of default individual channels and list of channel groups;

means for receiving program schedule information associated with the default individual channels;

means for storing the program schedule information;

means for retrieving the list of default individual channels and their associated program schedule information from the memory; and

means for displaying the list of default individual channels and a portion of the program schedule information associated with the individual channels on the electronic program guide grid according to the order of display indicated by the list of channel groups.

13. The system of claim 3, wherein the program schedule information includes detailed program descriptions of programs telecast by the default individual channels.

14. The system of claim 3 further comprising:

means for enabling a non-default individual channel; and

means for displaying the non-default individual channel and a portion of the program schedule information associated with the non-default individual channel according to the order of display indicated by the list of channel groups.

15. The system of claim 3 further comprising means for modifying the order of display of a particular individual channel and the portion of the program schedule information associated with the particular individual channel on the electronic program guide grid according to viewer preferences.

16. The system of claim 3 wherein the means for displaying comprises:

means for displaying a channel group associated with a particular individual individual channel on the electronic program guide grid according to the order of display indicated by the list of channel groups; and

means for expanding a list of individual channels belonging to the displayed channel group in response to a viewer command.

17. The system of claim 3 further comprising:

means for displaying a menu button associated with a particular channel group; and

means for jumping upon viewer command to a portion of the electronic program grid displaying a plurality of individual channels belonging to the particular channel group.

18. The system of claim 3 further comprising:

means for displaying a menu button associated with a particular channel group; and

means for displaying upon a viewer command a plurality of individual channels belonging to the particular channel group and a portion of the program schedule information associated with the plurality of the individual channels in a separate window of the electronic program guide grid.

19. A system for creating a display of an electronic program guide grid of a television apparatus, the system comprising:

a receiver for receiving a first data packet including a list of default individual channels to be displayed on the electronic program guide grid, for receiving a second data packet including a list of channel groups indicative of an order of display on the electronic program guide grid of all individual channels available to the television apparatus, each individual channel belonging to a particular channel group, and for receiving program schedule information associated with the default individual channels;

a memory coupled to the receiver for storing the list of default individual channels, the list of channel groups, and the program schedule information;

a microprocessor coupled to the memory for retrieving the list of default individual channels and their associated program schedule information from the memory; and

a display screen coupled to the microprocessor for displaying the list of default individual channels and a portion of the program schedule information associated with the individual channels on the electronic program guide grid according to the order of display indicated by the list of channel groups.

20. The system of claim 19, wherein the program schedule information includes detailed program descriptions of programs telecast by the default individual channels.

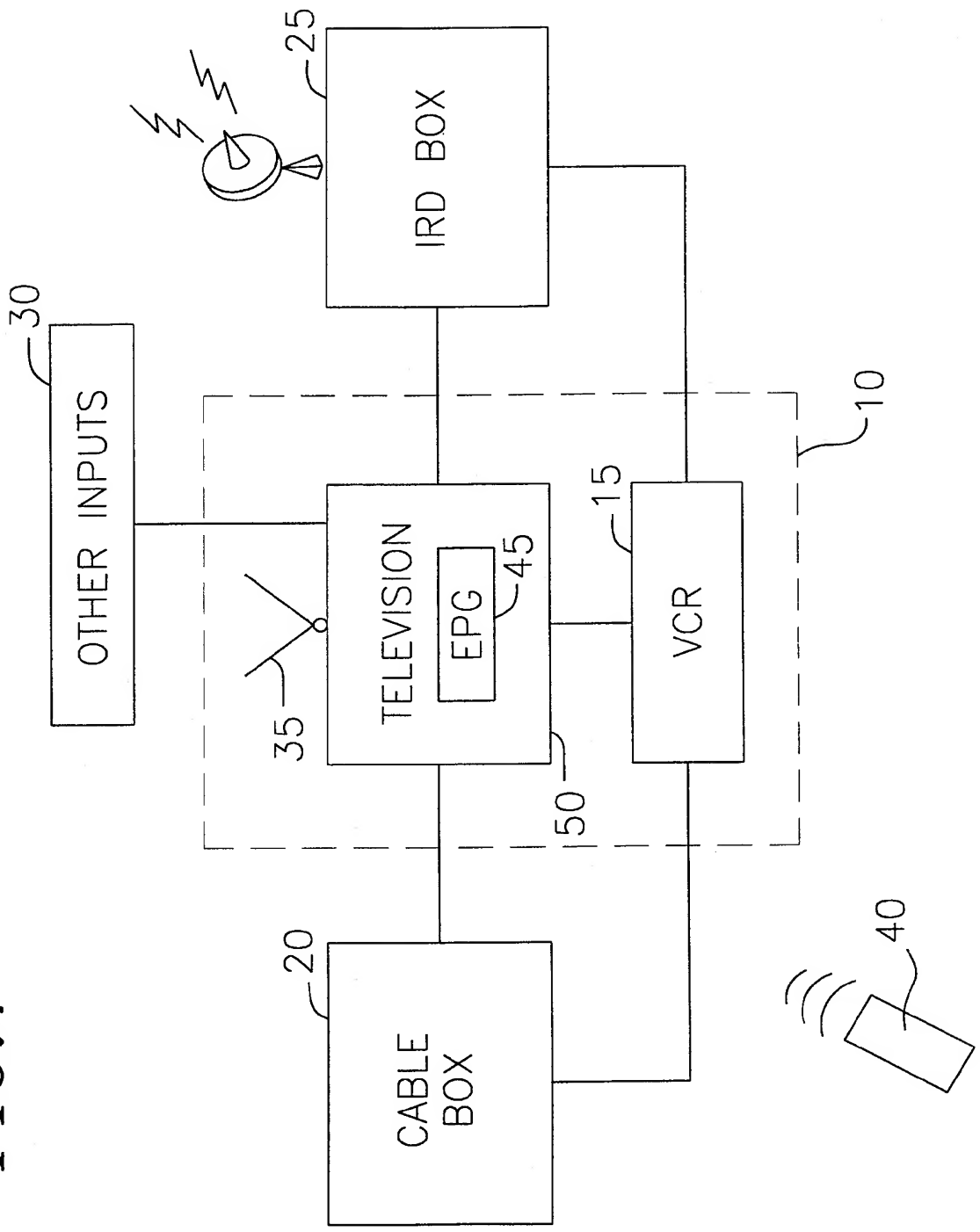
21. The system of claim 19 further comprising a channel editor screen for enabling a non-default individual channel for displaying on the display screen the non-default individual channel and a portion of the program schedule information associated with the non-default individual channel according to the order of display indicated by the list of channel groups.

22. The system of claim 19 further comprising a channel editor screen for modifying the order of display of a particular individual channel and the portion of the program schedule information associated with the particular individual channel on the electronic program guide grid according to viewer preferences.

23. The system of claim 19, wherein the display screen displays a channel group associated with a particular individual channel on the electronic program guide grid according to the order of display indicated by the list of channel groups and further displays an expanded list of individual channels belonging to the displayed channel group in response to a viewer command.

24. The system of claim 19, wherein the display screen displays a menu button associated with a particular channel group and further displays a portion of the electronic program grid displaying a plurality of individual channels belonging to the particular channel group in response to a viewer command.

25. The system of claim 19, wherein the display screen displays a menu button associated with a particular channel group and further displays a plurality of individual channels belonging to the particular channel group and a portion of the program schedule information associated with the plurality of the individual channels in a separate window of the electronic program guide grid upon a viewer command.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10
15
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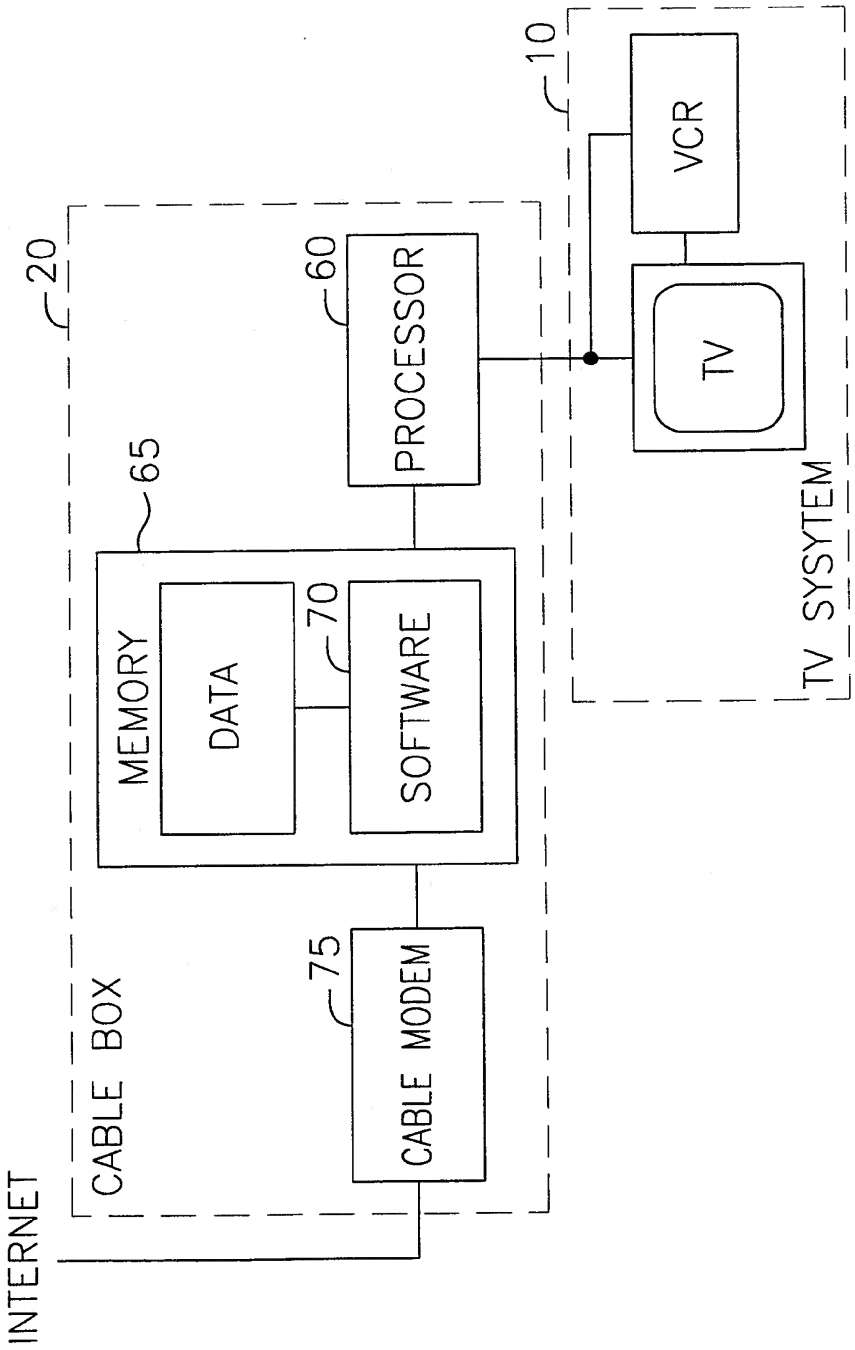
EPG
45
VCR
35
50
20
CABLE BOX
40

FIG. 1

FIG.2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CABLE MODEM
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MEMORY
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DATA
SOFTWARE
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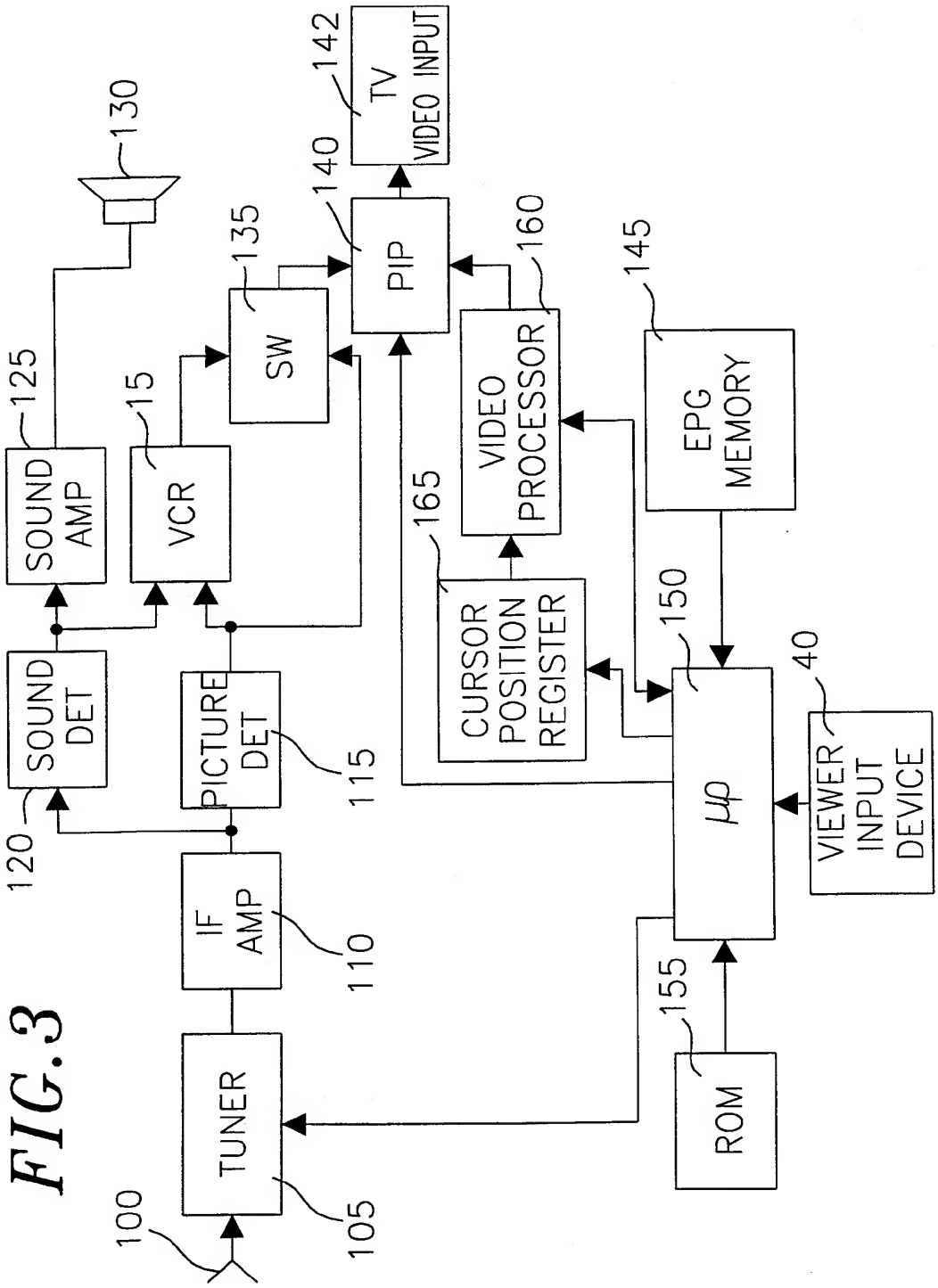
PROCESSOR
60
TV SYSYTEM
10
TV
VCR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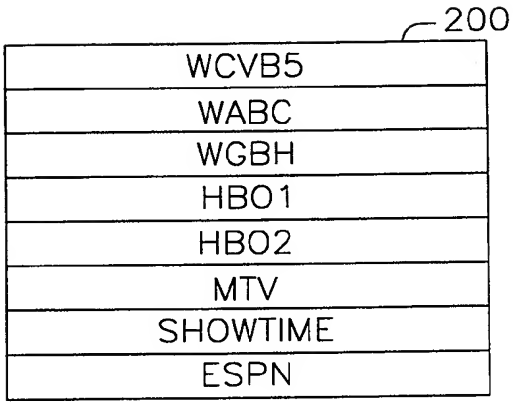
105
TUNER
110
IF AMP
115
PICTURE DET
120
SOUND DET
125
SOUND AMP
130
15
VCR
135
SW
140
PIP
142
TV VIDEO INPUT
145
EPG MEMORY
150
μp
155
ROM
160
VIDEO PROCESSOR
165
CURSOR POSITION REGISTER
40
VIEWER INPUT DEVICE

FIG. 3

FIG. 4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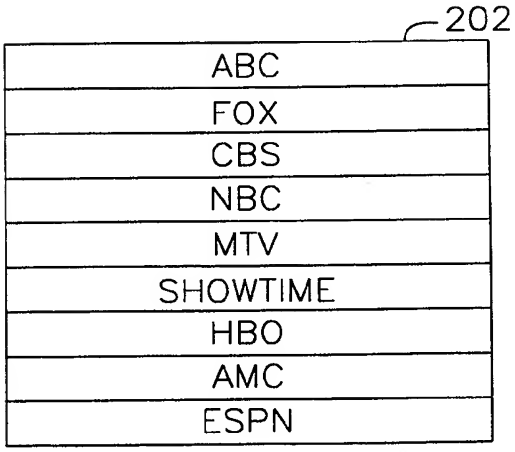
WGBH
HBO1
HBO2
MTV
SHOWTIME
ESPN

FIG. 5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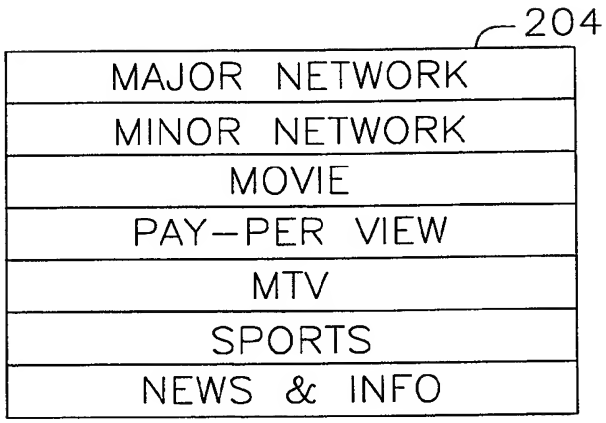
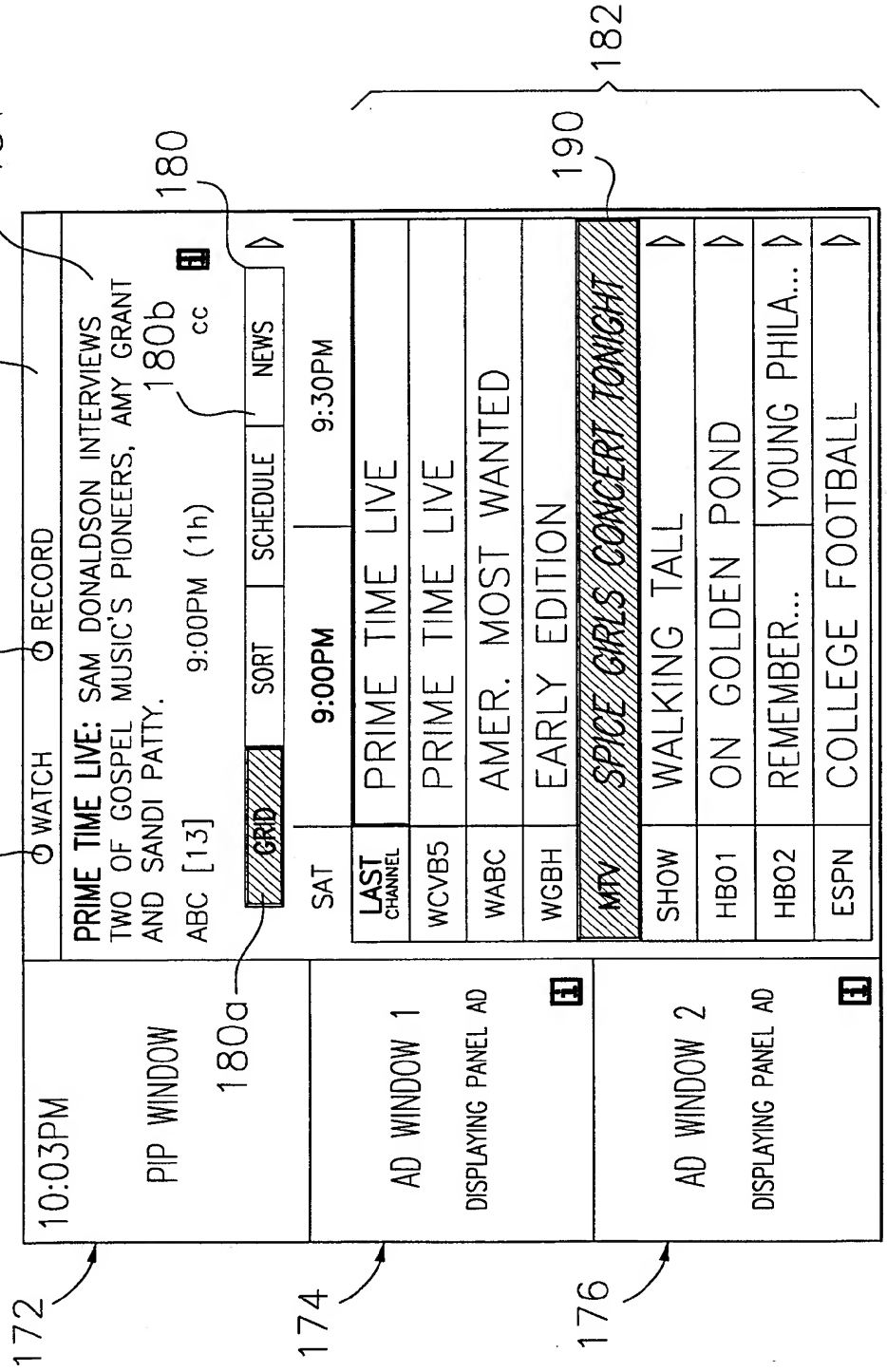
SHOWTIME
HBO
AMC
ESPN

FIG.6


204
MAJOR NETWORK
MINOR NETWORK
MOVIE
PAY–PER VIEW
MTV
SPORTS
NEWS & INFO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178
178a
178b
184
180
180a
180b
182
190
WATCH
RECORD
PRIME TIME LIVE: SAM DONALDSON INTERVIEWS TWO OF GOSPEL MUSIC'S PIONEERS, AMY GRANT AND SANDI PATTY.
ABC [13]
9:00PM (1h)
cc
GRID
SORT
SCHEDULE
NEWS
SAT
9:00PM
9:30PM
LAST CHANNEL
WCVB5
WABC
WGBH
MTV
SHOW
HBO1
HBO2
ESPN
PRIME TIME LIVE
PRIME TIME LIVE
AMER. MOST WANTED
EARLY EDITION
SPICE GIRLS CONCERT TONIGHT
WALKING TALL
ON GOLDEN POND
REMEMBER...
YOUNG PHILA...
COLLEGE FOOTBALL
10:03PM
PIP WINDOW
AD WINDOW 1
DISPLAYING PANEL AD
AD WINDOW 2
DISPLAYING PANEL AD
172
174
176

FIG. 7

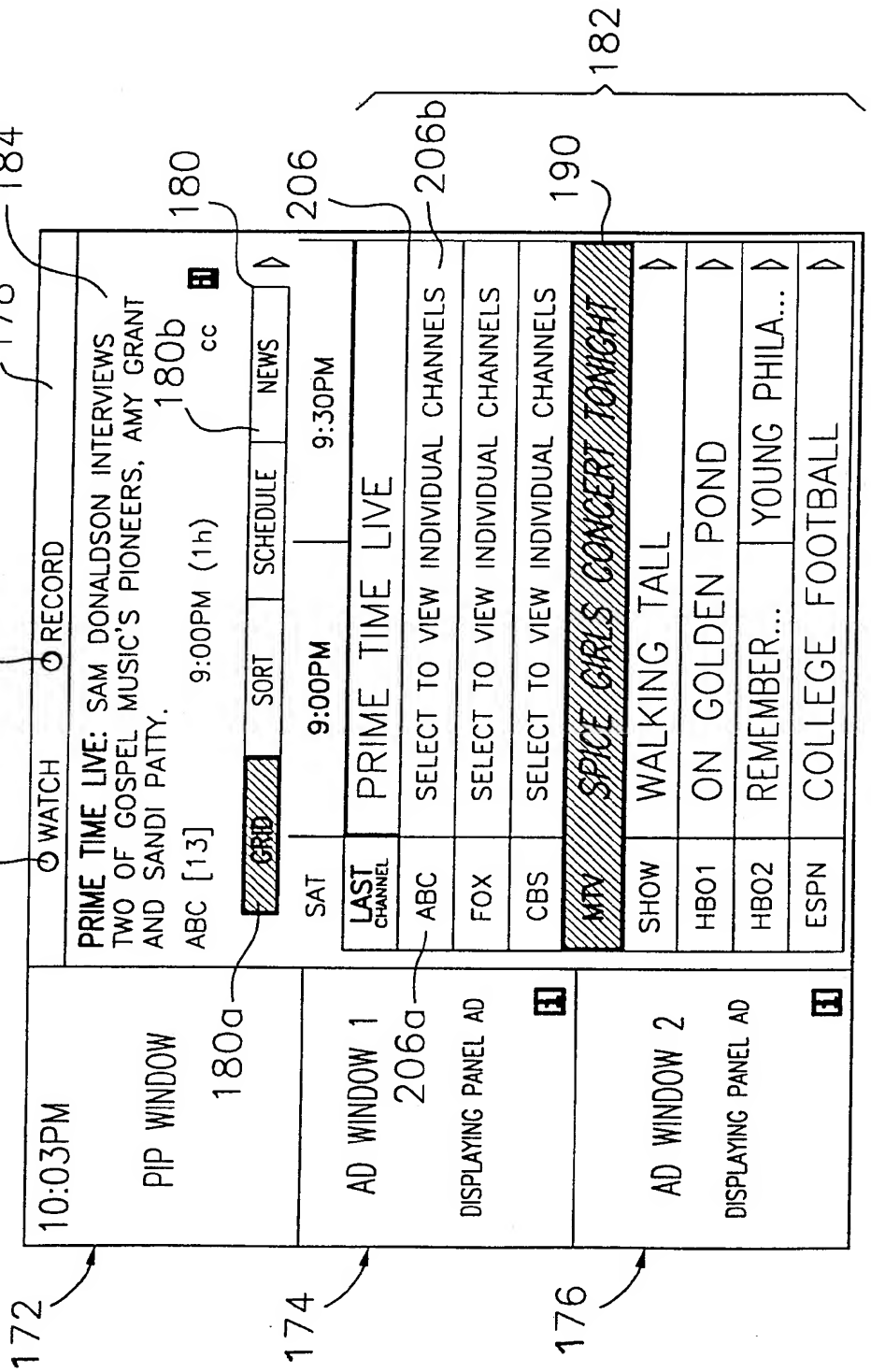
170
178
184
178b
178a
180
180b
206
206b
182
190
WATCH
RECORD
PRIME TIME LIVE: SAM DONALDSON INTERVIEWS TWO OF GOSPEL MUSIC'S PIONEERS, AMY GRANT AND SANDI PATTY.
ABC [13]
9:00PM (1h)
cc
GRID
SORT
SCHEDULE
NEWS
SAT
9:00PM
9:30PM
LAST CHANNEL
PRIME TIME LIVE
ABC
SELECT TO VIEW INDIVIDUAL CHANNELS
FOX
SELECT TO VIEW INDIVIDUAL CHANNELS
CBS
SELECT TO VIEW INDIVIDUAL CHANNELS
MTV
SPICE GIRLS CONCERT TONIGHT
SHOW
WALKING TALL
HBO1
ON GOLDEN POND
HBO2
REMEMBER...
YOUNG PHILA...
ESPN
COLLEGE FOOTBALL
10:03PM
PIP WINDOW
180a
AD WINDOW 1
206a
DISPLAYING PANEL AD
AD WINDOW 2
DISPLAYING PANEL AD
172
174
176

FIG.8

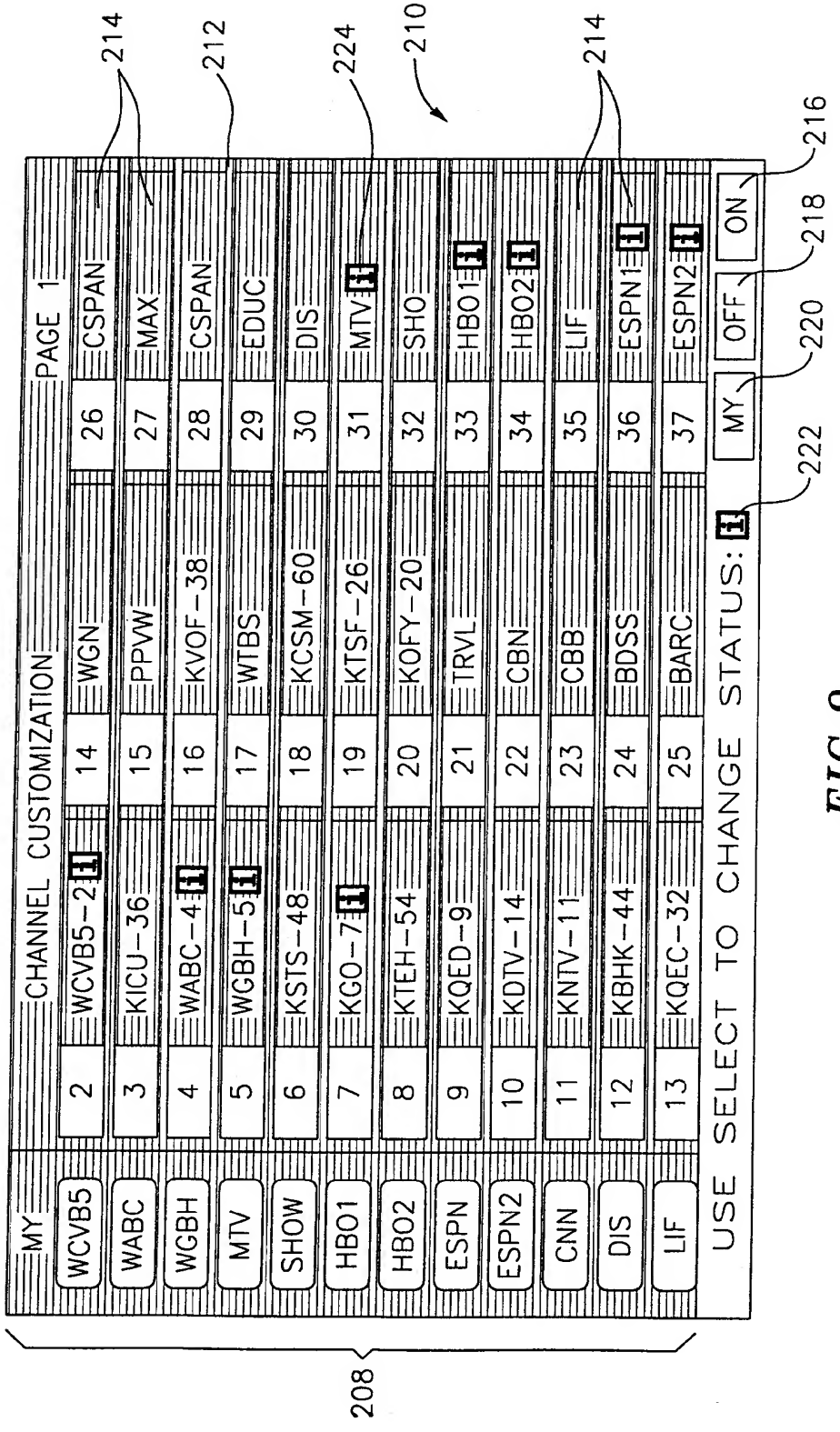
MY
CHANNEL CUSTOMIZATION
PAGE 1
WCVB5
WABC
WGBH
MTV
SHOW
HBO1
HBO2
ESPN
ESPN2
CNN
DIS
LIF
2 WCVB5-2
3 KICU-36
4 WABC-4
5 WGBH-5
6 KSTS-48
7 KGO-7
8 KTEH-54
9 KQED-9
10 KDTV-14
11 KNTV-11
12 KBHK-44
13 KQEC-32
14 WGN
15 PPVW
16 KVOF-38
17 WTBS
18 KCSM-60
19 KTSF-26
20 KOFY-20
21 TRVL
22 CBN
23 CBB
24 BDSS
25 BARC
26 CSPAN
27 MAX
28 CSPAN
29 EDUC
30 DIS
31 MTV
32 SHO
33 HBO1
34 HBO2
35 LIF
36 ESPN1
37 ESPN2
USE SELECT TO CHANGE STATUS:
MY
OFF
ON
208
210
212
214
214
216
218
220
222
224

FIG. 9

INTERNATIONAL SEARCH REPORT

Int dional Application No
PCT/US 99/31133

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 849 954 A (NEXTLEVEL SYSTEMS INC) 24 June 1998 (1998-06-24) the whole document	1,3,10, 12,19
A	US 5 828 945 A (KLOSTERMAN BRIAN LEE) 27 October 1998 (1998-10-27) column 2, line 9 - line 31 column 6, line 64 -column 8, line 20; figures 1,3	1,3,10, 12,19
A	US 5 223 924 A (STRUBBE HUGO J) 29 June 1993 (1993-06-29) column 1, line 55 -column 2, line 15	1,3,10, 12,19

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 April 2000	08/05/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040. Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Fuchs, P

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US 99/31133

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